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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/660,386	09/12/2000	Vladislav Vashchenko	NSC1-H1200	6925

33402 7590 12/12/2003

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EXAMINER
NADAV, ORI

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/660,386	Applicant(s) VASHCHENKO ET AL.
	Examiner ori nadav	Art Unit 2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 September 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the exact location of the device region with respect to the gap (space) between the first and second trigger regions, as recited in claims 8 and 16, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> **The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.**

Claims 8-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support for the claimed limitation of a device region being free of a conductive material, as recited in claim 8, because

applicant's device region (the gap between the first and second trigger regions) is doped with p- material, thus rendering it conductive.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

1. Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. The exact location of the device region with respect to the gap (space) between the first and second trigger regions, as recited in claims 8 and 16, is unclear since both the device region and the gap occupy the same space between the first and second trigger regions.

3. The claimed limitation of first and second trigger regions not electrically connected to the third and first contact regions, respectively, so that the first and second trigger regions and the third and first contact regions have the same potential, respectively, as recited in claim 20, is unclear as to how the first and second trigger regions not electrically connected to the third and first contact regions cause the first and second trigger regions to have the same potential as the third and first contact regions.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8-21, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (5,844,280).

Regarding claims 8-10, 15-17, 19 and 21, Kim teaches in figure 3 a device comprising a semiconductor substrate 1 of a first conductivity type P having a top surface, a first well region 2a of a second conductivity type N disposed in the semiconductor substrate, a second well region 2b of the second conductivity type disposed in the semiconductor, a gap region of the first conductivity type disposed in the semiconductor substrate and separating the first well region from the second well region, a first contact region P+ 3a of the first conductivity type disposed in the first well, a second contact region N+ 4a of the second conductivity type disposed in the second well region and being electrically connected to the first contact region to have a same potential, a first trigger region N+ 6a of the second conductivity type disposed in the first well region and spaced apart from the first and second contact regions, a third contact region P+ 3b of the first conductivity type disposed in the second well region, a fourth contact region N+ 4b of the second conductivity type disposed in the second well region and being electrically connected to the third contact region to have a same potential, a second trigger region N+ 6b of the second conductivity type disposed in the second well region and spaced

apart from the third and fourth contact regions, the first trigger region being positioned such that no other similar region having the not having the second conductivity type lies between the first trigger region and the second trigger region, wherein the first trigger region is spaced apart from the bottom surface of the first well, and wherein the first and second trigger regions contacting the gap and the semiconductor material, and formed on opposite sides of the gap.

Regarding claim 8, Kim teaches in figure 3 first and second contacts connected to first and third contact regions, respectively, and having top surfaces, a device region overlies the semiconductor material between the first and second trigger regions, and having a top surface that lies below and contacts a plane that contacts the top surfaces of the first and second contacts. The device region is free of a conductive material during certain operational modes of the device (e.g. depletion mode, saturation mode, etc.).

Regarding claim 16, Kim teaches in figure 3 a device region that overlies and contacts the gap region and being free of a gate. The device region does not have to lie below the gate, because the gap region which is located between the first and second wells does not have to be located under the gate. The gap region can be located between the first and second wells adjacent to the first or to the second well, only under the source or drain regions.

Regarding claims 11-12 and 18, Kim teaches in figure 3, the dopant concentrations of the first and second trigger regions are greater than the dopant concentrations of the first well region and the second well region, respectively

Regarding claims 13 and 14, during first and second ESD events, first and third potentials on the first and second conductive structures are greater than second and fourth potentials on the second and first conductive structures, respectively.

Response to Arguments

5. Applicant argues that Kim does not teach a device region being free of a conductive material and a device region that does not lie below the gate.

Kim teaches in figure 3 first and second contacts connected to first and third contact regions, respectively, and having top surfaces, a device region overlies the semiconductor material between the first and second trigger regions, and having a top surface that lies below and contacts a plane that contacts the top surfaces of the first and second contacts. The device region is free of a conductive material during certain operational modes of the device (e.g. depletion mode, saturation mode, etc.). Kim further teaches in figure 3 a device region that overlies and contacts the gap region and being free of a gate. The device region does not have to lie below the gate, because the gap region which is located between the first and second wells does not have to be

located under the gate. The gap region can be located between the first and second wells adjacent to the first or to the second well, only under the source or drain regions.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

O.N.
December 10, 2003

ORI NADAV
PATENT EXAMINER
TECHNOLOGY CENTER 2800